

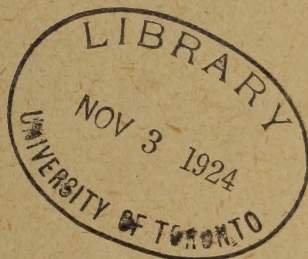
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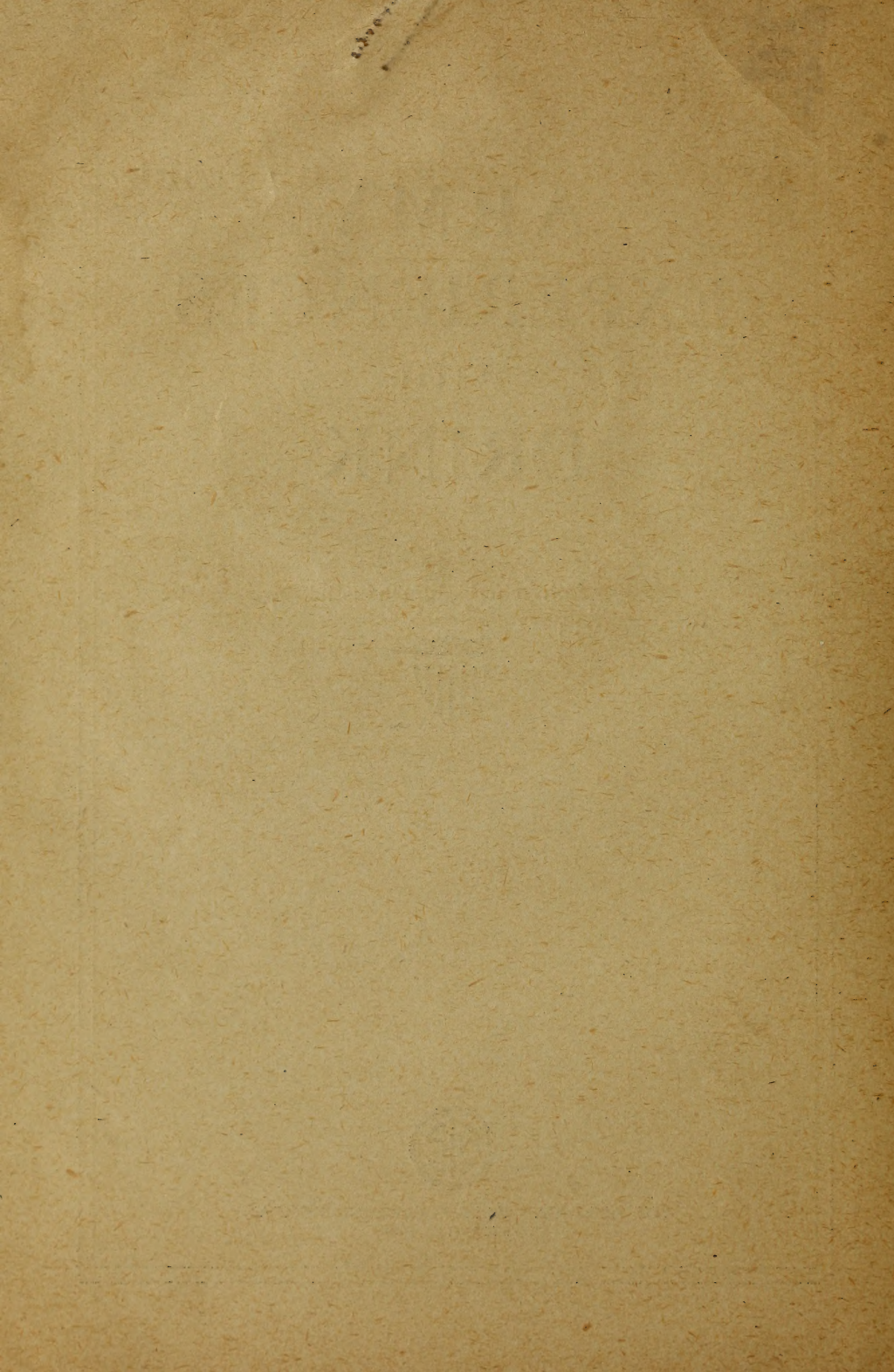
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ARMY EXPERIENCES WITH DRINK

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Army Experiences With Drink

By E. L. Transeau

Industry has shown a decided preference for men who do not drink, because they are found to be more efficient and dependable, less liable to absenteeism and disability, quicker in recovering from sickness or injuries.

A pertinent question when men are being called from productive industry to military service is whether the use of alcoholic liquor will be as detrimental to military efficiency as it is to industrial life.

Past military experience has furnished much important evidence on this point. *The Scientific Temperance Journal* has published from time to time within the last few years valuable contributions on the subject, some from American sources, some from England, and some from Germany, where diligent study was made of the relation of alcohol to military efficiency before the war began. Some of this material is here presented, together with other very recent facts, as they strikingly emphasize the reasons why alcoholic drinks should have no place in a nation at war.

DRINK SLOWS PREPARATION

The first consideration at the outbreak of war is to get men quickly trained and ready.

"A drinking bout," said Major Leonard Darwin at a conference in England at the time of Lord Kitchener's appeal, "means, at the very least, no progress made the next day, even if the man be capable of attending his drills. But it is not merely a day or days lost to individuals—it is far worse than that.

"A military unit has to acquire the power of acting as one united body, and the man who is ceasing to learn is, in a measure, keeping back all his comrades, however keen they may be—and they are intensely keen."

The advantages of the absence of drink during military preparations were demonstrated by Major-General O'Ryan of the New York State National Guard at the Peekskill Summer Infantry School in 1913.

"It was known," he says in an official bulletin giving the results, "that the course of instruction was such that the student officers would require the application of their physical and mental powers unimpaired by distracting conviviality, late hours, digestive

disorders and super-stimulation. It was further realized that the prohibition (of liquor) would furnish opportunity for practical and substantial development of military morale in that it would require a subordination of animal desire to the power of the will. Discipline being the most important factor in the attainment of military efficiency, and discipline being the result of moral as well as physical training, the rule against the use of liquor furnished an opportunity to test as well as advance the standard of discipline of the officers at the school. That our officers at this and the subsequent schools met this test in a manner leaving nothing to be desired, and that the sentiment among them is strong in support of continued prohibition during the periods of field service, is most satisfactory.

"In addition to the educational and disciplinary advantages accruing to the military service from non-use of liquor by its personnel, there results a benefit to the individual which is now authoritatively recognized, and concerning which officers of the line charged with the physical welfare of the men entrusted to them should have accurate knowledge."

When the army was called to the Mexican border in 1916, Major-General O'Ryan applied his prohibitory order both to saloons and houses of prostitution. The results were exceptionally good health, discipline, and morale among his troops.

GERMANY'S MILITARY EXPERIENCE WITH ALCOHOL

All the world knows how Russia surprised her enemies by the speed of her mobilization and the part played in it by the Czar's prohibition order.

Germany also recognized the necessity of keeping her soldiers sober during mobilization. Orders were issued forbidding the sale of liquor in the railroad stations and along the routes over which the soldiers were to pass. But numerous medical men of Germany have protested that the restriction was not thorough enough nor continued long enough to accomplish what was needed.

"From the field, after a few weeks," says Prof. Trommershausen, of Marburg, in *Die Alkoholfrage* (Nos. 2 and 3, 1915), "particularly in the West, came irrefutable reports of the bad effects of too much alcohol upon military discipline and fitness. The hardships of the marches and trenches might be expected to lead to heavy drinking. And, according to military reports, severe punishments had to be pronounced for infractions of discipline on account of drink, both during and out of service.

"The reports are indisputable that the use of alcoholic liquors in enemy countries led to such evils that sharper measures had to

be taken for the remainder of the war against this hereditary enemy of the German people.*

"Strict orders should have been issued for the whole of Germany, for the young recruits, coming directly from their homes and school benches, finding themselves in the cities without restraint, when they were relieved from duty met and indulged in the strongest kind of temptation to alcoholic and sexual excesses.

"For those on leave at home, or discharged from hospitals and in garrison posts, there is still lacking today any uniform instruction concerning visits to the public house and the use of alcohol. Three commanders, those at Coblenz, Wurzburg and Stuttgart, have strictly forbidden the frequenting of public houses by soldiers at home posts and the use of alcohol by convalescents. But in other military districts these classes all go together to the public houses and the sorrowful consequences upon health and morality are patent to all.

"There has been no lack of angry protest. As one general has said:

"There is no more harrowing sight in all these awful times than to see a drunken man wearing the king's coat."

"Even in the hospitals there is no uniform policy concerning the use of alcohol, and yet wounded men should never have poisonous drinks, except on express orders of a physician.

"There is no uniformity in the military orders concerning alcohol because they originate with individual commanders instead of from a central authority.

"Some of the instructions caution against an immoderate use of beer, and one forbids public houses to sell to intoxicated men.

"What is immoderation in beer drinking? And who would expect a liquor seller to distinguish between a man enlivened by drink and one becoming intoxicated?

"Little good can be expected from trying to differentiate between liquors having a high or a low percentage of alcohol, or from limiting the sale of the former to 5 o'clock and that of the latter to 11.

"The restriction of the sale of spirits to certain hours will fail of its purpose if the sale of beer and wine is allowed. It is more practical to prohibit the sale of alcoholic liquors, as the commander at Cassel has done.

"One general orders prohibition for the day of a general assembly. Why not for all?

"The instructions of the military authorities that are directed to the civil population deserve the particular attention of our societies. Posters containing these may be put up in suitable places,

*The authorities of the Central Powers evidently tried to avoid the earlier experiences when Serbia was occupied. A general order preceded the army of occupation that plenty of non-alcoholic drinks should be ready, that all liquor-selling places except hotels and restaurants should be closed, and great signs were posted on these buildings forbidding soldiers to enter.

thus calling public attention to the necessity the authorities have found for anti-alcohol instructions.

"This will prepare the way for the needed general legislation on the subject. Everyone knows the difficulty of securing legislation in the face of the opposition of the liquor interests. But the people can be set to thinking.

"For example: The commander of Hanover has declared that intoxication cannot be offered as an excuse for infractions of military discipline. Why should not the same rule apply to civil populations?

"In the same way, every one of the military measures against intemperance during the war raises the question, Why were these not necessary before the war, and if they are necessary for the protection of our ability to fight, why are they not necessary for the protection of our efficiency after the war?"

DEMONSTRATIONS OF THE DAMAGE TO NAVAL AND MILITARY EFFICIENCY

Before the war began, German scientists had gathered up from various sources the evidence of the damaging effect of alcohol upon the powers and qualifications demanded for effective fighting. One of the most comprehensive presentations of the whole matter was made by a surgeon in the German Imperial Naval office, Dr. Stephan. It was published in the *Marine Rundschau*, June, 1906. Because of its importance the translation of the article is here given without abridgement:

NAVAL WARFARE AND ALCOHOL

The alcohol question in our navy has been the subject of two previous articles in this magazine, both dealing with the effects of immoderate use and its consequences to the service and proposals for combating the present nuisance. This article will deal with the effects of moderate and small doses, and the influence which they would exert in modern naval warfare.

According to our national conceptions, the following are considered moderate amounts of alcohol:

One bottle ($\frac{3}{4}$ quart) of Rhine wine, 55-60 grams (1 2-3—2 oz.) absolute alcohol.

One bottle ($\frac{3}{4}$ quart) of Red wine, 50-55g. (1 2-3 oz.) absolute alc.

One-half bottle ($\frac{3}{4}$ quart) of Champagne, 50-55g. (1 2-3 oz.) absolute alc.

One bottle ($\frac{3}{4}$ quart) of Mosel wine, 45-50g. (1 1-2 oz.) absolute alc.

Two glasses of Port wine or sherry, about 36g. (1 1-5 oz.) absolute alc.

Two glasses of brandy, about 36g. (1 1-5 oz.) absolute alc.

One quart of beer, 30-40g. (1 1-3 oz.) absolute alc.

As small amounts:

One-fourth quart, i. e., 1 small glass of beer equal to 10g. (1-3 oz.) absolute alc.

One little glass of light spirits equal to 10g. (1-3 oz.) absolute alc.

What effect these amounts of alcohol have on healthy men, in the full strength of their manhood, is a difficult question to answer from daily life for two reasons: Self-observation leads usually to deceptive results because the judgment is impaired, as we shall see later, and the resulting disturbances are mostly so unapparent that they escape the ordinary observer. Not until

the very painstaking and exhaustive experiments continued for many years at Heidelberg by Prof. Kraepelin and his pupils, was this clearly brought out.

Since Prof. Kraepelin's investigations furnish the foundation for our conclusions and are necessary for a comprehension of them, we will give a brief description of the methods of the experiments with the results.

Psychological Experiments

The chief points in the investigation are as follows:

In order to be able to study the effects of alcohol upon the individual, it is necessary to analyze our mental operations and to test the effects of alcohol upon the separate functions by the simplest experiments.

Emotions and feelings (in a broader sense our moral inner nature) are excluded because we know of no method by which we can measure and compare their strength. We can, however, investigate:

1. Our power of perception, that is, the extent and precision with which we become aware of sense impressions.

2. Our power of attention, that is, the extent and certainty with which we grasp and hold a sense impression.

3. Our power of association, that is, the ability to connect images and ideas, and in a broader sense, the power of judgment.

4. The rapidity with which an impulse to move ends in actual movement.

5. Muscle power in both its finer and coarser aspects.

1. The test of the power of perception was confined to the sense of sight. It consisted* in forcing upon the attention with the greatest possible speed, certain letters of the alphabet. The letters were presented for the shortest time in which sometimes, but not always, they could all be perceived. The number of correctly perceived sight-stimuli (nonsense syllables as well as one and two-syllable words) were taken as the measure of the power of perception.

The apparatus for the experiment consisted of a revolving drum behind which letters of uniform size were made to appear at regular intervals through a small opening. The width of the opening and the velocity of the drum were so arranged that all of the letters were not always clearly distinguished by the various observers.

The subject of the experiment named aloud the character he observed as it appeared before his eyes and his words were immediately recorded stenographically. The apparatus is called the perception drum.

2. The "shooting slide" furnishes the most exact means of measuring the power of attention. With this apparatus, aided by a mechanical device similar to the shutter in a camera, letters of uniform size and uniformly lighted are presented to the eye of the subject for a uniform but very brief time.

Of the series of experiments performed with the shooting slide, the one that particularly interests us is the second. In this a definite uniform interval of time between the successive readings on the slide was given to exercises of various kinds, such as counting, reading or adding, for the purpose of diverting attention, and then determining how many of the characters presented briefly to the eye just before by the shooting slide had been correctly impressed. It is quite remarkable that a considerable number of errors were found among the data that the subject thought had been correctly impressed.

A further test of the power of attention is the memorizing of a column of twelve figures.

3. The association experiments were so arranged that quick responses must be given to a number of words. From a long series of responses can then be computed how many of the associated words stand in a logical, rational relation and how many express only an external, accidental connection; in other words, whether the thinking is rational and connected, or shallow and inattentive.

4. The time required by a subject to answer a definite signal with a pre-arranged response was ascertained. This is called his **reaction time**.

5. In order to measure the gross strength of muscle, a dynamometer was

pressed down as forcibly as possible with the right hand and the indicator read. The Moss ergograph was also employed. A weight to which a cord is attached passes over a pulley and is attached to the finger. Bending the finger raises the weight and the height to which it is raised is automatically recorded by a pencil marking on a revolving cylinder. A computation from these marks shows the amount of work done.

The next step was to determine the effect of a single, moderate, and a single small dose of alcohol, and the effects of such use continued for a long time.

Perception

Acht[†] investigated the influence upon the power of perception exerted by three-fourths of a quart of beer, by means of the perception drum, determining the number of letters that were read, the number miscalled and the number omitted. He found the working ability considerably lowered. More of the letters and syllables were omitted or incorrectly read. When one considers that impairment of perception comes most in evidence through omissions, then there can be no doubt from the large number of letters omitted that the power of perception was considerably impaired. The effect of the alcohol was most clearly shown in the reading of the meaningless syllables; here in consequence of the small help afforded by memory the perceptive faculty was concerned in its purest form. In the reading of these syllables the first letter was most frequently omitted, the last less frequently, and yet more frequently than the middle character. This shows that the ability to turn the attention quickly to the object presented (stimulus) is lowered and that the impression made upon the attention fades. In other words, under the influence of three-fourths of a quart of beer, attention is directed to an object less quickly and the impression made is less vivid. The impairment begins about ten minutes after the alcohol is taken and reaches its maximum after from twenty-five to thirty minutes.

Rudin[‡] experimented with 100 ccm. of alcohol, corresponding to about two bottles of Rhine wine or one bottle of champagne and found with a revolving drum, a considerable increase of errors and omissions. For example, the precision as well as the scope of perception was considerably lowered, and the effects of the amount of alcohol used lasted from four to twelve hours.

Kraepelin's experiments with one-fourth of a quart of beer showed also a weakening of the power of perception. Kurz and Kraepelin|| proved that when two quarts of beer were slowly taken in the evening and a test was made with the perception drum the next morning, more syllables and words were omitted than when no alcohol had been taken the previous evening.

The Influence Upon Attention

Rudin ascertained by means of the shooting slide that after the use of 100 ccm. of alcohol (equal to two bottles of red or Rhine wine or two and one-half to three quarts of beer) the ability to reproduce a quickly presented sense impression suffered considerable loss in clearness and precision after fifteen to thirty seconds. He found also that more impairment was shown in the reading of disconnected syllables than in the reading of words, that attention was impaired more than perception. The disturbance created by the alcohol increased, therefore, with the difficulty of the task.

In the duration experiments of Kurz and Kraepelin the memorizing of twelve place figures showed a loss of 40 per cent.

Concerning the association experiments Kurz and Kraepelin stated that: "On the whole it was clear that on the non-alcohol days the associations showed more rational, more specific, more discerning, more observing connections, while on the alcohol days the connections were more confused, foggy, sentimental and general; also that there is greater promptness in the association on the non-alcohol days, and the operation is easier, but on the alcohol days more difficult.

The experiments of Supt. Joss,^{||} of the seminary of Bern, about seventeen years ago, are especially instructive. The work consisted of the solution of

arithmetical problems and took into account in the same way attention, concentration, perception, memory, the connection of ideas, comprehension and keenness.

The seminary pupils were divided into two groups of ten each, one group receiving from one-tenth to one-third of a quart of wine or three-tenths to one quart of beer (corresponding to from ten to forty grams of absolute alcohol), the other group received none.

After a brief and unimportant rise, the working ability of the alcohol group decreased about 4.9 per cent the first hour, 10.9 per cent the second hour, and 12.5 per cent the third hour. The decrease in each experiment was in proportion to the amount of alcohol taken.

Reaction time, that is, the time required to reply to a signal, is at first shortened by small and medium amounts of alcohol, but later it is lengthened. The lengthening is especially marked in the "choice reactions," that is, where a choice has to be made between two signals in accordance with a pre-arranged plan.

Rudin remarked in his observations with the shooting slide that the result often appears to be influenced by greater promptness of speech, that is, by hastening responses prompted by inexact and false perception.

Experiments with the dynamometer offer opportunity for testing not the rapidity but the intensity of muscle innervation, and also of rightly estimating the inner experience which, in the choice experiments, signalizes to us the feeling of a considerable increase of working strength. It is this familiar experience which has continually led to the inference of a strengthening effect from alcohol and even today makes alcohol appear indispensable as a stimulant in hard physical labor.

Kraepelin, however, found in his own case only a very temporary increase of gross muscle power, and in his assistants even this was absent. In the ergograph experiments it was found that after fifteen to twenty grams of alcohol (equal to a glass of brandy or one-half a quart of beer) the number but not the height of the liftings increase in the first hour of the experiment, the impulse to movement was quickened, but the strength declined. Hard work, therefore, is not made easier, but more difficult by alcohol.

Mayer** investigated the influence of three-fourths of a quart of beer upon writing. The writing movements decreased in speed after five minutes and at the same time the ability to adapt the muscle control to the making of fine strokes was lost.

Kraepelin summed up the results of his studies as follows: "The most positive result in nearly all of the experiments is that alcohol in amounts of from thirty to forty-five grams (one quart of beer, one-half a bottle of wine, two glasses of sherry), rendered in some degree more difficult all the mental processes investigated. With doses of sixty grams the hindrance is very considerable for from one to two hours; with smaller doses it passes away in from forty to fifty minutes. In contrast to the detriment to perception and its effect upon the intellect, alcohol facilitates, at least in the beginning, the impulse to motion. But here it is only the speed that is influenced; the output of strength is benefited only temporarily, with small doses and with persons of small susceptibility toward alcohol, and the increase soon gives place to a considerable diminution."

Such is the quantitative outcome; but qualitatively, work done under the influence of alcohol undergoes certain changes. We observe, all through, the conversion of a sensible connection into a mechanical one, and loss of the inner objective in favor of a purely external, accidental connection.

Furer†† ascertained and Rudin verified the fact that a large drink taken in the evening has an observable effect the evening of the following day, and a drink taken before breakfast has a still longer effect. The injurious effects will not therefore be banished by a single night's sleep.

Confirmation by Target Practice

A striking confirmation of this strictly scientific laboratory work, especially for the military reader, is furnished by the experiments in target practice instituted by the Swedish and the Norwegian armies.

In 1903 the publisher of the Swedish Rifles Magazine, Lieutenant Bengt Boy,†† undertook to determine the influence of alcoholic drinks upon marksmanship by means of practical experiments on a large scale. The program and the method of exercise were worked out after extended theoretical preparation. The experiments were performed upon the training field Ranneslett with the consent of the military authorities, who lent interest and sympathy to the undertaking.

The exercises, all at a distance of 300 meters, consisted of a precision exercise of five shots, a quick-firing exercise lasting one-half minute, volley firing of four shots, and a duration experiment of five shots.

Many of the various series were performed first without alcohol, then with alcohol, then again without alcohol, and all the shooting was done under exact control. In the experiments of short duration, precision, quick firing, and volley shooting, from thirty-four to forty-four grams of alcohol in the form of brandy (two and one-half glasses) were taken from twenty to thirty minutes before the beginning of the exercise, and besides, the same amount of alcohol in the form of punch on the evening before the experiment day. In the endurance tests only twenty-seven grams of alcohol, equivalent to two-thirds of a quart of beer, were taken.

The result of the experiments was, without exception, a loss of precision under the influence of alcohol. In the quick-firing exercises in the non-alcohol tests there were only sixteen failures to 100 in the alcohol tests.

In sharp contrast to these objective results of the experiments were the subjective impressions of the participants. In the quick-firing experiments, especially, the men were certain after taking alcohol that they had done exceptionally well. One remarked after discharging his shots that he thought one could shoot better after taking alcohol.

Closely similar results were obtained in Norway in 1904. There the marksmanship of soldiers who had received the field ration of alcohol was compared with that of men who had received none. The number of hits after taking this moderate field ration was 60 per cent less than the usual average of good shots.

The results of the Heidelberg researches, moreover, have been verified by so many other scientific experiments that it would be difficult to summarize all the findings in a brief review.

The Use of Alcohol in the Navy

We are now ready to consider the influence of alcohol in a modern naval battle since we can apply the abstract results of science to the conditions on board a mobilized fleet.

Efficiency of the Troops and Under Officers, Range Finders and Gun Crew

In a naval battle the severest demands upon physical executive ability fall upon the gunners and torpedoists, and next upon the machinists and firemen. The work is made difficult partly by the heat of the engines and partly by the powder smoke on the gun platforms, and for this reason it is more difficult than the hardest labor required of workmen on land. The work is also, especially for the machinists, not simply a matter of exerting all their strength for a short time, but it may have to continue, as the experience of the last naval war showed, for months. And to make the matter still worse, sleep is cut down to the minimum, and time for rest, outside of the short allowance for sleep, can seldom be secured.

If we recall the experiments with the dynamometer and the ergograph, it is evident that the engineers and gunners can do more without alcohol than with even small amounts of it.

Signal Corps and Lookouts

The chief requirement of the lookouts and signal men is quick, sharp, and accurate perception and attention to everything that goes on far and near, as well as a correct response to what is seen or heard either by report or question. This recalls the experiments with the perception drum and the shooting slide. But there in the quiet laboratory, in a good, steady light and without any disturbance of the feelings, and here on board a floating

ship, the conditions are quite different. Aside from the emotional disturbance, which for concentration of attention requires the greatest self-control, the power of observation is often rendered difficult by fog, rain, blinding sunlight on reflectors, strong wind, darkness, or the roar of the guns.

The impaired power of perception of sense impressions corresponds to impaired power of attention and the appearance of gross mistakes in recollection. Ought we to add these proven effects of alcohol to the impediments to perception and attention that are unavoidable incidents to naval battles?

Still greater demands are made upon gun captains and range finders, the compass and sextant observers and the machinists. They must not only observe keenly and correctly but their muscle movements must be finely co-ordinated for the correct adjustment of light weights and small screws, a task which experience has shown, may be made difficult by mental excitement alone. If one recalls the evidence showing that even moderate amounts of alcohol have an unfavorable influence upon precision and speed in writing, as well as that showing that it facilitates the discharge of muscular movements without at the same time improving the mental operations, as the quick-firing experiments of the Swedish army proved, then one will desire to have every kind of alcoholic drinks barred from this branch of the service.

Duties of the Officers

Apart from keen perception, the question for every officer is that of a rapid and correct combination of the events occurring within the scope of his command. The higher the officer the more difficult are his mental operations. Even if one escapes from the highest mental operations involved in the experimental investigations, still all the circumstances indicate that not only the half intuitive conceptions but those as well that effectively direct the most rapidly changing environment are subject to the same laws as the simpler mental processes whose unfavorable influence by alcohol has been proved. Of greater importance moreover for officers of all grades and all ranks is the greater readiness of speech brought out under the influence of alcohol.

There remains only to draw the conclusion that has a special significance for our German relations and this in my opinion is the following:

In foreign waters all alcohol should be fastened in the hold and not opened until actual demobilization.

The question arises whether, in the interests of efforts at moderation, attempts to decrease the use of alcohol as much as possible would not be sufficient. No. In the first place on a mobile fleet there is something more important to do than to inspect the canteen and calculate the quantity of liquor used. And in the second place experiments have shown that even moderate or small amounts of alcohol, which might be harmless in a quiet and comfortable life on land are placed in a different light under the extraordinary efficiency that naval service requires.

If only gradually declining doses were allowed, then overstepping of the limit and punishment would be in the day's program, for such doses do not produce the exciting effects for which alcohol is desired.

It is to be expected that notwithstanding all the excitement, the monotonous life on board a mobilized ship, without shore leave, might lead even moderate persons frequently to drink, especially as there would scarcely fail to be some bad examples.

And how could it be proved whether one drank immoderately or not when the only measure for immoderation is intoxication, while the impairment of one's fitness for service, as we have already shown, begins much earlier?

The nourishing and warming value of alcohol, which have been urged in its favor—erroneously as has been shown—does not enter into the question in naval service. Insufficient provisioning, that often occurs on land, and scarcity of food, are as good as excluded on board ship, and warmth in the way of clothing and heating is also much better cared for than is often possible on land in a winter campaign.

The further objection may be raised that with these radical rules more

harm than good is done, because such a severe curtailment of personal liberty as the prohibition of an old popular custom must greatly reduce the enjoyment of the service.

The reply to this is that a ship in active service is no place for individual freedom; there, nothing but stern necessity rules. Besides, the healthy man in times of keen mental tension has no need of excitation by alcohol. Any one who feels it to be necessary in times of peace should be rejected as unfit for military service.

That alcohol taken as a "bracer" arouses to quicker thoughtless expenditure of energy is without doubt to be admitted, but it is an error to imagine that modern naval battles are to be won by such means. The kernel of this matter is contained in the following words of a naval officer of high rank:

"Conditions on the water are quite different from those on land. In the naval fight it is not the individual men who charge, but only the commanding admiral, and for him the charging is a very sober arithmetical problem, and the difficulty of this task is not lessened by the legendary glass of champagne."

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SPECIAL EFFECTS OF ALCOHOL ON SIGHT AND HEARING

Still further tests might be cited showing definite impairment of the special senses of sight and hearing by quantities of alcohol which few habitual drinkers would consider extraordinary.

Perception Impaired

Bush (*Tubingen*, 1909) tested the perceptive power of the brain when in a completely normal condition and again after taking 30 ccm. (one ounce) of alcohol, and found constantly on the alcohol days a narrowing of the field of observation, often incorrect and delusive observation. The injury began as early as ten minutes after the alcohol was taken and lasted about three-quarters of an hour.

The Effect on Sight

Reis (*Bonn*, 1895) tested the influence of 80 ccm. of alcohol upon eye measurements. He placed a yardstick in front of the subject and had him indicate what he considered the middle. After taking alcohol the errors in estimating were four times greater than the normal.

Transfer the results of these laboratory tests to the activities of the field soldier, and the patrol who had received three-fourths of a quart of beer (30 ccm. alcohol) would see only a part of what is generally visible, and this often perverted and distorted; the officer who had drunk a bottle of Rhine wine (80 ccm. of alcohol) would make blunders in his estimate of distances.

A Practical Question for Sentinels

Impressions on the sense of hearing are also impaired by small amounts of alcohol. Specht (*Archiv. fur Psychologie*, 1907) proved that the ability to differentiate the loudness of sounds was notably diminished by from 10 to 40 ccm.

While a person without alcohol could distinguish between the sounds produced by a small metal ball falling from a height of 30 cm. and 32 cm., after taking alcohol he could not tell a difference until the greater height had been increased to 40 cm., and even then there was always a tendency to attribute the loudest sound to the ball that fell last. The influence of the alcohol quickly deadened the impression of the first sound and when it was compared with the sound just heard it appeared to be weaker.

Even if alcohol heightened the ability to hear a fainter sound than could be heard without it, as the experiment shows, of what use was it when the power of the brain could not rightly interpret the sound? Of what use would it be to the listening sentinel if, after a glass of beer or whisky, he could hear at his post a fainter sound, but were unable to tell whether the cause of it were advancing or retreating?

False observations never lead to correct judgments.

That German military men who permit or favor the use of alcoholic liquors by the soldiers do not represent the opinions of their highest authorities on hygiene is shown by the contents of a new handbook for field surgeons, in which Prof. Max Gruber, of the Royal Hygienic Institute of Munich, makes this protest:

The new weapons in the present art of warfare put the severest demands upon every officer and, indeed, upon every soldier. . . . Everything must be done, therefore, that can be done to maintain everyone's reserves of physical and mental powers, or at least to prevent unavoidable expenditure and all avoidable sources of weakness.

This is no time for the use of alcohol. Not only is the guzzling of all alcoholic drinks to be stopped, but the use of even small amounts is, as a rule, an evil.

It is scientifically established that even small amounts of alcohol weaken and paralyze our powers of observation, memory and judgment, the command of our intellect, our wills and our reason, our impulses, our brains, our body; cut down the gains from exercise, the endurance of hardships, the ability to resist external injuries.

One's strength and mental power may be enough to withstand the moderate use, but efficiency cannot be improved by it. And those of us who are small and deficient in mental and physical power act recklessly when we dissipate the little that we have, especially when we are under obligations to accomplish the most that we can.

Experience Confirms the Tests

In the actual experience of the present war, the losses occasioned by alcohol have confirmed the results of the tests. Sir Victor Horsley, who entered the service as surgeon soon after the war

broke out, wrote to the *British Medical Journal* before his death in Mesopotamia, that both military and naval officers had found that the use of alcohol in quantities up to two and one-half ounces of rum daily caused:

Decadence of morale; friction and disorder; drunkenness; decadence of observation and judgment; errors and accidents; loss of endurance and diminution of physical vigor; fatigue, falling out and slackness; loss of resistance to cold; chilliness, misery and frost-bite; loss of resistance to disease, particularly to that occurring under conditions of wet and cold, such as pneumonia, dysentery and typhoid fever; loss of efficiency in shooting.

Half the rum ration, he said, means a loss of 40 to 50 per cent in rifle shooting. The navy rum ration causes a loss of 30 per cent in gunnery.

The British authorities in charge of the army and navy who went back to the provision of alcohol as a portion of the fighter's rations were opposed by the medical authorities almost unanimously. Horsley shows that the use of alcohol as a stimulant is based upon the most flimsy foundation of old tradition, and has practically no support from the side of scientific observation, said the *New York Medical Journal* (Feb. 27, 1915).

ALCOHOL NOT WANTED BY ENGLISH NAVAL OFFICERS

Vice Admiral Sir J. R. Jellicoe, commander-in-chief of the Atlantic fleet, has said that "in the navy there are three qualities upon which efficiency depends. They are discipline, straight shooting and endurance, and sobriety unquestionably tends greatly to the promotion of these qualities.

"In regard to discipline, one has only to look at the punishment returns to realize how many of the disciplinary offenses are due at the outset to intemperance.

"As for endurance, medical research has amply proved the fact that sobriety is a great asset in improving the physical qualities, and therefore, the endurance of the human race. But from our own personal experience we know that we do not drink alcohol just before a football match or a boat race. If we do we shall fail, and the same is true of any other pursuit involving endurance.

"As regards straight shooting, which is so largely a question of the eye, it is everyone's experience that abstinence is necessary for the highest efficiency. If I am going to a rifle meeting in the afternoon, I don't drink a whisky and soda at lunch. If I did I know I should have no chance of making a 'possible.' What applies to a rifle applies equally to a heavy gun and all admirals recognize this by taking care that the fleet is called away from a harbor

on urgent business at least 24 hours before battle practice or a gunlayers' test is to commence."—*The Alliance News*.

THE EFFECT UPON MARKSMANSHIP TESTED OUT

No one qualification is more important in the soldier than ability to shoot straight, to hit the mark. The effect of alcohol upon marksmanship has been tested by special experiments, the first by Lieutenant Bengt Boy of Sweden, whose report has been widely published; one by a Bavarian regiment at the suggestion of Prof. Kraepelin, and another is just reported by the Paris correspondent of the *Journal of the American Medical Association* (May 12, 1917). Full reports of the last have not yet come to hand. The brief announcement is that a member of the army medical corps chose the best shots from the non-commissioned officers and soldiers of his regiment and had them fire a series at 200 meters. They were then given a dose of brandy, approximately 50 gms., after which they fired a second series similar to the first. These experiments were repeated at different times and under different conditions, with always identical results. It was found that the efficiency of the marksmen after the absorption of the alcohol had depreciated 30 per cent in rapid firing and 50 per cent in slow firing.

The following report of Prof. Kraepelin's experiments is translated from the *Internationale Monatsschrift zur Erforschung des Alkoholismus*, etc., Oct.-Nov., 1916. XXVI. Heft 10-11:

The Swedish shooting exercises showed a very high rate of failures in hitting the mark after the soldiers had taken about 30 to 40 grams (1—1 1-3 oz.) of alcohol. The possibility that all of the conditions of the experiment had not been arranged with sufficient precision, and the limited number of tests as a basis for generalizing, led Prof. Kraepelin to suggest to the Bavarian Minister of War a repetition of the trial. It was readily accepted and the experiments were carried out at the Lechfield camp.

Twenty expert and reliable men were selected for the tests and sixteen days were set apart for the experiment, which consisted of thirty series of tests, covering sixteen days, in which 27,000 shots were fired, at a distance of 200 meters (about 217 yards).

The twenty men taking part being under military rule could be effectively supervised as to their manner of life. They lived as uniformly as possible from day to day and were not allowed to take other doses of alcohol than the ones required for the experiment, or to use coffee or tobacco, which might interfere with the results.

The day on which alcohol was given was followed by one of like conditions in every respect, except that a similar quantity of water and no alcohol was given.

The Plan of the Experiments

Every experiment was divided into four test periods, the first of which was followed by the dose of alcohol, or water. The other three test periods followed, one after five minutes, one after 25, the last after 45 minutes. The amount of alcohol given on the alcohol days was 40 grams (about one and one-third ounces), equivalent to about two pints of 4 per cent beer.

Both forenoon and afternoon were used for the experiments; but the results were kept separate, as it was found that the afternoon efficiency in precision was not quite as well maintained as that of the morning, the basis of comparison being always the first of the four periods of the exercise.

In Table I, A stands for the first period of the forenoon and B for the first period of the afternoon. Each of these periods was followed by a dose of water or of alcohol. The figures 1, 2 and 3 indicate the results on precision in shooting in the succeeding test periods, at from 5 to 10 minutes, 25 minutes and 45 minutes, after the water or the alcohol was given.

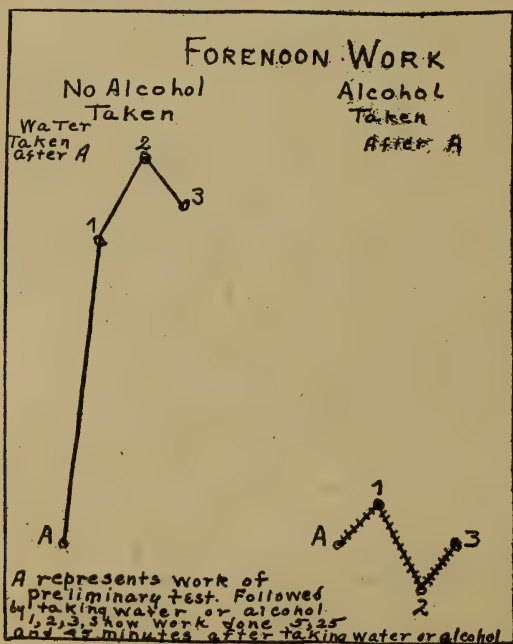
TABLE I.

	A	1	2	3	B	1	2	3
Normal days	100	102.2	102.8	102.5	100	102.0	102.5	101.4
Alcohol days	100	100.3	99.7	100.0	100	102.7	100.5	100.8

These figures represent the value of the work estimated, not by absolute hits or misses, but by the proportion of hits and near-hits, reckoned carefully by sections of the field of the target showing where the balls had struck. The first period, as the basis of comparison, is placed at 100 per cent, the others in percentages of this.

General Results

On the normal days, the results of both forenoon and afternoon show that the precision first increases, then slightly declines. Thus in the second and third periods there was the customary increase found in all precise tests of efficiency soon after the start and attributed to the effects of the exercise, "getting warmed up," as it is sometimes termed in America. It is to be



distinguished from the gain in skill that results from long practice of any art. It is no doubt a mental effect, the result of intensifying concentration. After a period of sustained mental application the mind relaxes, which may account for the decline in the fourth period, which is attributed by the experimenters to fatigue.

Forenoon Work

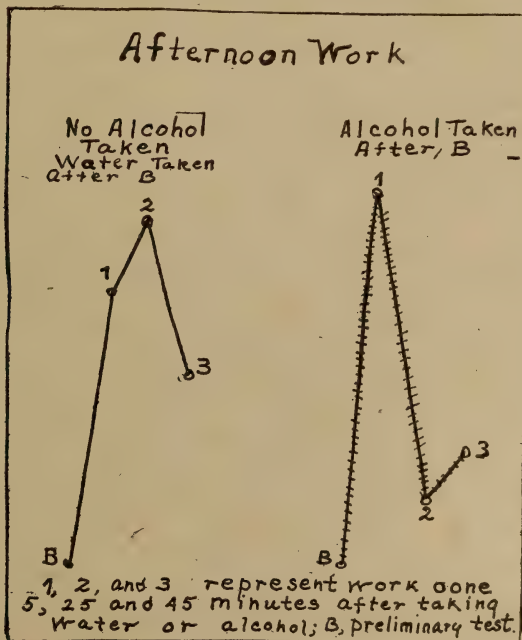
Comparing the forenoons of the normal and the alcohol days, period by period, we find, on the alcohol days, only a fractional increase in the first

period and a drop in the second, while the third is the same as the first. The work of all of the periods following the taking of the alcohol is below the corresponding records of the normal days. The gains that were to have been expected from exercise, in accordance with the universal rule, have been more than offset by the alcohol.

Afternoon Work

The picture for the afternoon is a little different, and if we were to judge merely by the figures we might say that here better work was done in the first period following the alcohol (five minutes after the alcohol was taken), but we have to consider here the matter of the midday meal. The alcohol at this time was taken on a full stomach, and might be expected to pass more slowly into the system than when taken on an empty stomach, as it was in the forenoon. So that at first only a small part of the alcohol became effective. There would still be, however, the slight gain of seven-tenths of 1 per cent over the water days to be accounted for. Prof Kraepelin thinks it may have been due to a slight removal of embarrassment, an effect which alcohol without doubt has, and which is in line with its relaxing effect upon inhibition. But why this should occur in the afternoon in conjunction with a meal and not in the forenoon, Prof. Kraepelin does not suggest. This slight improvement occurred with only seven of the men. Except in the case of a very few this slight improvement at the beginning was reversed in the next period. In the last period there was a small improvement only twice.

With eleven men there was nothing but impairment from the start. On



the average this impairment amounted to 4 per cent in the first five to ten minutes; with some men to 10 per cent. Where there was improvement in this period after alcohol, it amounted usually to only one-half of 1 per cent, but occasionally to 7 per cent.

In the following period, 25-30 minutes after taking the alcohol, the record shows there was a sharp drop in precision, an average diminution of 2 per cent from the record of the non-alcohol days. Seventeen of the men showed a decided impairment which ran from 6, 7, 8, 9 to even 12 per cent.

At the time of the last period, 45 minutes after the alcohol was taken, the impairment in most cases had begun to subside. On the average it was still 3 per cent, but with some individuals 10 per cent.

The general average of impairment in precision for the **forenoon** by periods Prof. Kraepelin gives as: first period, 1.9 per cent; second period, 3.1; last period, 2.5. For the **afternoon** there was an increase in the first period of 0.7 per cent; second period, decrease 2 per cent; third period, decrease 0.6 per cent.

Only two of the men showed nothing but a favorable result from the alcohol, and that amounted to only about one-half of 1 per cent.

Self-Judgment Impaired

"It was especially interesting to note," says Prof. Kraepelin in summing up his account, "that in these shooting experiments we met distinctly again the well-known alcoholic delusion concerning one's own abilities. When questioned concerning their impression of how well they had done, five believed they could shoot better under the influence of alcohol, three had observed an impairment and the others could give no opinion. Of the first group, three actually had shown an improvement at the start, and one even at the close of the experiment. At the maximum of the effect all three had done worse. The other two declined in precision as much as 10 per cent.

"The second group had, as they thought, shot worse under the influence of alcohol, but in one case only a very little. The others had been unaware of the very marked impairment of their work, reaching as high as 10 per cent. Ten of the men declared when questioned that they would rather have the alcohol when they were to shoot and the majority of these were badly influenced by it. Precisely in this self-deception which concealed from them the impairment of their ability lies, of course, a special danger.

"The results of this experiment may throw a certain amount of doubt upon those of Bengt Boy, but the demand for great accuracy must be emphasized. The relatively small number of mis-hits here was probably due to the fact that the men were excellent marksmen. One must admit that efficiency less perfected by practice is more susceptible to the impairing influence of alcohol.

The Experimenter's Conclusions

"Correct marking of the scores is only possible when the individual subject is considered. It is nevertheless not an insignificant fact that even the small amount of 40 grams of alcohol may cause impairment of precision in a number of expert marksmen of long practice, amounting to 10 and even 12 per cent, without their being conscious of it.

"It is to be noted in that connection that the conditions in war, aside from the occasional larger amounts of alcohol obtained, often must be much more unfavorable than with the subjects of our experiments. Loss of sleep, over-exertion, insufficient food, irritable state of mind may greatly increase the impairing effect of the alcohol which preponderates even under the most favorable circumstances. Even if there is still a lack of experimental evidence, every day experience still seems to speak very clearly in this respect."

THE EFFECT OF ALCOHOL UPON THE SPIRITS OF THE SOLDIER

While the effect of alcohol upon efficiency is too conclusive to be denied, there are some who defend its use as a restorative after prolonged strain, or as a help in enduring the horrors and hardships of the battle front.

Dr. Brunzlow, a German army surgeon, who had been asked by the editor of *Die Alkoholfrage* to write for publication his observations on the effects of alcohol in war, says on this subject (No. 1, 1915):

Take the case so frequent in war, when the soldier after a brief rest must be called upon for renewed exertion; the private must go on guard duty, the officer must mount his horse or enter an automobile and go out into the night to get information or to carry an important report, the physician is called upon for the most intensive work by the sudden arrival of a large number of wounded.

Then appears immediately the paralyzing effect of the alcohol that has been taken. Some have contradicted this effect. Officers have held that alcohol is a whip that revives the nerves and makes them capable of new efforts. I have tried the experiment on myself repeatedly. On the other hand, true to my habits, I have tried restoring myself after hard service by a short rest, moderate light nourishment—a plate of soup, a piece or two of bread with meat—and have on the other hand gone to rest after taking a glass of wine, and I can testify that it affected me in the field exactly as it did when I was changing from moderate use to abstinence. After a light meal and a short rest I was, indeed, still tired, but capable of new work; but after taking alcohol I was almost incapable of it, that is, it needed the exertion of my entire will power to overcome the depressed state that made itself felt as much as if I had taken some other kind of narcotic. Even if I admit that a more robust person accustomed to the use of alcohol might have been less sensible of this paralysis, I still deny that it would not have existed. There is no doubt that a trial of abstinence would convince anyone, as it always has, of the truth of these observations.

Even if a glass of wine is followed more quickly by sleep, the effect is not good. One who observes himself closely can note, even with very small amounts of alcohol, from one to two glasses of red wine in the evening, that after a time, if he takes it regularly, he does not generally feel as fresh, particularly in the morning hours, as he does during entire abstinence. Under the pressure of circumstances I have tried this on myself and believe that I have observed it wholly objectively. And so, while for a time I deviated from my practice of abstinence, I have returned to it strictly with comfort, a higher sense of well-being and an increased zest for work.

Dr. Brunzlow also corrects the mistake of supposing that one may count on becoming immune to alcohol by getting accustomed to it and then be able to use it safely to banish fatigue. He says:

It is not yet sufficiently well known that the effect of alcohol is much more pronounced upon men who are hungry, over-tired or enduring undue strain. These conditions are present in the army particularly after long and strenuous maneuvers, in bivouac when the provisioning cannot be accomplished until late in the evening and after hard cavalry practice.

A second source of intolerance is sickness, and arrest and punishment. The latter tends particularly to mental depression through the feelings of pain, anxiety, anger and strife which greatly reduce the resisting power of the brain against the paralyzing effects of alcohol. Even the stimulus of joy can produce this effect.

Thus an amount of alcohol which had previously produced no noticeable effects may cause evident signs of intolerance in soldiers who have been for some time in the hospital, particularly if they have suffered from pneumonia, influenza and typhus, or if they have been arrested, have been angered by unpleasantness in the service, have quarreled with comrades, have been anxious about home affairs, or even when they have been rejoiced by the meeting of old comrades. The intolerance will be shown by intoxication and infraction of military discipline.

"The quantities of alcohol that can produce these effects vary in the same individual under changing conditions, and in different individuals under like conditions, and the army particularly abounds in the conditions that produce these variations. It is, therefore, a directly dangerous experiment to issue an alcohol ration to soldiers, whether it is given for the purpose of "strengthening" or of enlivening them. For a body of troops is composed of individuals of very different mental and physical constitutions so that we

cannot know beforehand whether or not a number of them will be injuriously affected by the ration.*

The criminal reports abound in cases in which alcohol has been the immediate cause of offenses.

These offenders were not men of criminal tendencies, but men whose disregard of discipline was due to the poisoning of their minds by alcohol. The drinking customs of the army, furthermore, are entirely dependent upon the customs of the citizen population.

Thus we have found that alcohol, as a rule, diminishes physical efficiency, a diminution that has a three-fold cause: Depression by alcohol of the nervous system, the skeletal muscles and the heart, including the muscle fibers that control the caliber of the blood vessels.

The paralyzing action of large doses of alcohol is no longer doubted. The effect of smaller doses is still held to be different by many investigators who judge by the subjective impressions. It must not be overlooked, however, that scarcely two decades ago this opinion was held by everyone, but that subsequent careful experimental investigation has destroyed its support.

The Army to Be Regarded as a Unit

If there are here and there individuals who are "stimulated" by alcohol, that does not affect the question of what is best for soldiers.

A body of troops is regarded as a unit although composed of many individuals. That the same quantity of alcohol acts differently upon different individuals is beyond doubt. But if it injures only a part of the men in a regiment, those who are less resistant to it, it diminishes to that extent the efficiency of the whole.

Dr. S. Drucker, of Berlin, adds further testimony to the effect of alcohol upon the ability to resist war's strains and hardships, *Der Abstinente Arbeiter*, Feb., 1916:

Alcohol Injuries Worse in War

Fearful as is the destruction caused by alcohol in time of peace, it may be enormously extended in time of war. In the field, the natural resistance of the soldier's body to injuries is often lowered by extraordinary exertion, irregular, monotonous, and, often, insufficient food. The man is more susceptible to injury. Unfavorable influences such as heat, cold, wet, wind, which at other times would have no effect, may, in the weakened condition of his body, bring on nervous sickness.

All of the organs do not suffer in the same degree; it is constantly shown that those on which the heaviest demands are made become more susceptible than the others and become disordered first. No proof is needed to show that the present war with its tempestuous vehemence brings the greatest strain upon the nerves. Muscles of the arms, legs and heart are less taxed.

And upon these nerves, strained to the breaking point by night service, by bomb explosion and gun fire, alcohol, which is a true nerve poison, adds another and by no means insignificant injury. Must not the failure of the nerves hasten the breakdown of the whole man?

A Menace to Military Responsibility

But entirely apart from the fact that alcohol favors physical and mental disorders it brings still greater danger to men in the field. In the disturbed

*After this paragraph was written, the health report of the Imperial Troops in Southwest Africa, during the Hottentot uprising, was published, covering the period from January, 1904, to March, 1907. During that time an experiment was made which furnished the following results:

The daily issue of one-tenth of a liter of rum per man under certain frequently existing conditions, instead of producing the expected increased feeling of strength and improvement of spirits caused, on the contrary, heaviness and other undesirable results of an opposite nature. Flagginess, unsociability, quarrelsomeness, neglect of duty, were some of these effects. It was not simply that a certain number of men had either a constitutional or an acquired lack of resistance to alcohol, but that otherwise entirely healthy men manifested great lack of resistance and susceptibility as a temporary state brought about by the unfavorable conditions of the campaign, such as over-exertion, under-nourishment, lack of sleep, hunger and thirst, irritation, digestive disorders, heat and the hot sunshine.

mental state which it causes, men are liable to make slight errors which may be fatal not only to those committing them but to many of their comrades. Here it is not simply a matter of money making, of office routine and duties, here it is a matter of life and death. It is playing not only with one's own life but often with that of many hundreds or thousands of others. Only those whose eyes and heads are clear can fulfill their duty to themselves and those beside them. If the locomotive engineer must go without alcohol, must not also the soldier at his no less dangerous post?

Most of those who have taken up this question, even persons holding responsible positions in the army, condemn only the immoderate use of alcoholic drinks; small amounts of whisky, wine or beer appear to them to be immaterial.

But even if they assume the wholly untenable position that every one can bear equally well the same small quantity, the standpoint is still further unjustifiable because of all that science teaches about alcohol.

It is an indisputable fact that even the moderate use of alcohol has an unfavorable influence upon the nervous system. There is here no room for doubt or quibble; the question is definitely settled.

The War Minister of Saxony issued a circular to his generals in 1911 calling their attention to the effects of alcohol upon military discipline both as regards offenses by the privates and mistakes and abuse of authority by officers.

"Men who are otherwise good soldiers," he said, "when under alcoholic excitation allow themselves to be carried into committing crimes of passion and then have to suffer heavy punishment which often injures their whole lives.

"Abuse of authority on the part of the higher officers becomes more infrequent in proportion as alcohol is avoided at the mid-day meal. Excitable natures, as is well known, are very easily aroused by small amounts of alcohol. It is therefore to the interest of both sides, of the officers as well as of the men, to keep as free as possible from alcohol.

"It is of the greatest importance that the commanding officers should be fully instructed concerning the influence of alcohol upon mental and physical working ability. The responsibilities of those in command in time of war particularly, but in time of peace as well, demand such keenness of intelligence, such constant and untiring coordination of acquired strategic knowledge, such ability to make unerring disposition of forces according to the exigencies of often lightning-like changes in the condition of the combat, that only those officers can perform their tasks correctly who possess these qualities indispensable to leadership. Since the use of alcohol frequently checks such mental activity and reduces still more the ability to maintain it, abstinence from alcoholic drinks, or strict temperance, is the peremptory essential. Further, the less tendency toward the use of alcohol there is among the inferior officers the greater will be the sobriety of the subordinates and men, and so much the more reliable for the higher officers will be the whole machine."

SLOW RECOVERY FROM WOUNDS

It is claimed that a higher percentage of the wounded are saved in this war than have been in previous wars, owing chiefly to greater skill in the surgical treatment.

But, according to a German physician stationed for a time in Constantinople (*Der Abstinente*, Feb., 1916) the same degree of skill does not always produce the same ratio of recoveries. The surgeon wrote to his home papers in Umrich of the astonishing resisting power of the wounded Turks, offering as an explanation the suggestion that their superior resistance is perhaps due in no small degree to their abstinence from alcoholic drinks. In fact, he said, it was difficult to get them to take it. They did not like it, and only by representing it as medicine could their prejudice against it be overcome.

This statement is in accord with numerous others

"Military surgeons," Dr. Holitscher says, "have repeatedly reported that wounds heal with remarkable rapidity in the abstinent Mohammedans, about as they do in children.

"This indicates that the unfavorable changes that we have ascribed to advancing years are far more probably due to the prevailing drinking customs. In the same line is the common observation that operations on women progress much more favorably, as a rule, than those upon men, other conditions being similar.

"The unfavorable effect of alcohol upon the resisting power of the blood and its constituents against infectious disease has been many times demonstrated by experiments on animals. It is always the case that animals which have received alcohol in considerable quantities for a long time, either before or after infection with the germs of disease are less resistant, that is, they succumb to smaller degrees of infection or they die sooner than others that have taken no alcohol. Such investigations have included the germs that would cause suppuration.

"From all of these facts and observations it is clear that alcohol is to be classed with those influences that tend to diminish the natural resistance of the body and its tendency to promote the healing of wounds. Hence it is evident that alcohol should not be given to soldiers who are in constant danger of being wounded. And naturally, it should not be given those who are suffering from any kind of a serious wound."

Another Serbian abstaining physician, Dr. Popovic, of Belgrade, who saw service as a surgeon in the Balkan War, made it his business to observe everything which closely or remotely concerned the alcohol question. He gathered facts directly among the Serbian and Bulgarian troops. He was able to observe also Turkish prisoners and to receive information second-hand concerning the other allied armies of that war.

"In the Serbian army where I am best acquainted with the facts," says Dr. Popovic (*L'Abstinence*, Sept. 6, 1913), "the officers, with the exception of a minority, who are Good Templars, drank wine, less often beer and spirits, and even rarely wine in large quantity. But they abstained absolutely only when they could not procure it. I observed, however, that many of them did not take alcoholic drinks during a battle, and this was particularly the case with artillery and higher officers.

Endurance Due to Sobriety

"The soldiers and officers of lower rank lived on an almost completely abstinent regime during the whole campaign, because it was very difficult for them to procure alcoholic drinks and although the Serbian peasants very readily drink their spirits, one could prove that they very quickly dis-accustomed themselves to alcohol and did not seek it again. It is to this fact that we can attribute to a large extent the superhuman endurance of the Serbian soldiers.

"On the other hand, they received tea and sugar during the rigorous cold weather which at times reached 20 degrees below zero, and in places where the water was suspected. In the majority of subdivisions wherever epidemics were feared only boiled water was drunk. The foreign witnesses of the Balkan War have declared that they never saw the Serbian soldiers drunk or even exhilarated. (See especially the book of Dr. Vischer, "At the Serbian Front," and that of Boucabeille, "the Turco-Balkan War.")

Health and Good Discipline in Abstinent Corps

"There were corps more or less important in which the commanders or the physicians were consistent abstainers and where, during the whole war, not a drop of alcohol was drunk.

"A division of field artillery in the division of the Danube where the commander, Lieutenant Colonel Lazarevic, a zealous Good Templar, obtained from his troop complete abstinence, had the remarkable experience of not having to report a single serious cause of sickness or any notable infraction of discipline. One could show the same facts in other abstaining commands. Among my soldiers, also, who took no alcohol, although they had exceedingly arduous labors to accomplish, and to endure cold and a very rigorous service, we had no epidemic, our losses were at a minimum and the number of sick very limited.

Diseases Caused by Drink

"I can note, on the contrary, two examples where alcohol had serious consequences. They were communicated to me from an altogether reliable source and I do not hesitate, in the general interest, to publish them.

"One case was that of a cavalry scouting party whose duty it

was to reconnoitre the route of the troops on the march. Instead of going forward without delay, it spent three hours in a place where it found music, refreshments and a jolly company, and resumed its way fairly well exhilarated. As a consequence of its delay it brought insufficient information, so that the troops which it was supposed to enlighten were surprised and attacked and suffered heavy losses, the most severe of the war.

"One other case: An officer of high rank, who, with his staff, had consumed a large quantity of wine, while in the resulting state ordered an attack upon a fort, which ended in retreat and in considerable losses which were both useless and absurd.

As a Cause of Inhumanities

"In the Bulgarian army, where the soldiers daily received alcohol, one could prove many cases of drunkenness, especially among the volunteers, but also among the officers and subordinates who were good clients of alcohol.

"I was witness after the fall of Adrianople of a case in which soldiers in a state of pronounced drunkenness maltreated the Turkish, Armenian and Greek inhabitants and prisoner-soldiers and officers, and even killed some of them. I saw several in this same condition sacking houses, not even respecting churches. I saw with my own eyes (and can call witnesses) drunken men sacking and profaning the famous mosque of Selim.

"If I were to sum up my experiences and observations in the war as to alcohol, I should do it thus:

Prevalence of Mistaken Ideas

"Educated persons took alcohol most of the time because of fear of suspected water or to quench thirst. During the war we often had what was dubbed 'hydrophobia of the friends of alcohol.' Physicians even were persuaded that to protect themselves better from typhus, dysentery and cholera they should take alcoholic drinks and avoid water. They depended on the bactericidal properties of alcohol, but forgot that alcohol by virtue of its bactericidal action exercises its harmful influence on the cells; and also that the haemolytic power of the blood is reduced or destroyed by immoderate use of alcohol, and that in this way the development of infection is facilitated. They forgot also that those who use alcohol are less alert and do not take account of other sources of infection (such as bread, fruits, the hands, linen, utensils, etc.). They took no account of the fact that one can always make water harmless by boiling it, and that it is much easier and less expensive to produce good water, boiled water, or mineral waters, than wine or beer. They sometimes sent 15 miles for wine, although they had the best spring water only a mile away.

"Such men, as well as the common soldier, imagined that alcohol gave them strength, courage, gaiety.

Alcohol Unfavorable to Wounds

"The use of alcohol was shown to be unfavorable also in the healing of wounds, as has been observed in preceding campaigns. I am indebted for an interesting observation to a volunteer hospital sister, Mlle. Protie, a teacher, who served in a Belgrade hospital and studied some hundreds of wounded soldiers as to their alcoholic habits. She found that those who were not in the habit of taking alcohol recovered from wounds relatively more quickly than those who used the drinks. I was able to make the same observation, though on a smaller scale. Several of my colleagues found also that the wounds of the Albanians, who, as I have said above, are almost wholly abstainers, healed more rapidly and completely than those of any other people.

"All the wounded Serbians received only warm tea and no alcohol. The Bulgarian doctors, on the contrary, gave their patients brandy in abundance.

"It is truly a sad and incomprehensible fact that doctors thus propagate alcoholism. There were in that war, especially in the hospitals, cases in which brandy, wine and beer were used in celebrating victories. One must protest vigorously against such practices.

War Horrors Aggravated by Alcohol

"War is a very pestilence which not only destroys human life and material property, but also the fruits of the long labors of civilization, diminishing the moral qualities of man acquired with difficulty. Coupled with alcohol, war is the greatest pestilence of the world. We who are working against alcohol ought as laborers for civilization to strive for universal peace, and, in the name of humanity, to combat alcoholic habits both in time of peace and of war."

ACTUAL EXPERIENCES IN THE PRESENT WAR

When Russia adopted Prohibition, the army was one of the first places to show the good effects. The mobilization was accomplished with surprising swiftness, due, as was everywhere asserted, to the absence of drink.

As the war progressed, the benefits of the prohibition became everywhere strikingly apparent. Newspaper correspondents with the Russian army wrote enthusiastic accounts of the happy results of the no-drink policy.

"The one thing that impresses the observer more and more each day," wrote the correspondent of the *London Times* (November 19, 1915), "is the soberness and good behavior of the Russian troops. I have now been with the army nearly three weeks and have seen

thousands upon thousands of soldiers from all parts of Russia. I have yet to see the first drunken or disorderly man connected with the army, either officer or soldier. The dread of soldiery, which is the rule when armies are spread over the land, is absolutely lacking. It is certain that the prohibition of strong drink has worked wonders in the Russian army."

But for the treasonable plotting which left the Russian army without munitions and other supplies in the midst of her successes, the victorious advances might have continued. If, in addition to the enemy sympathizers within, Russia had been hampered by the demoralizing vodka, she would not have had the internal prosperity and the widely organized societies for aiding the soldiers.

Great Britain's Losses

All the while that the reports from Russia have been showing the blessings from the absence of drink, those from the other countries at war, particularly England and France, have been demonstrating the handicaps and injuries which the use of alcohol places upon a country at war and amply justify Lloyd George's declaration:

We are fighting three enemies, Germany, Austria and Drink, and it appears to me that the greatest of these is Drink.

That this assertion was no idle phrase is demonstrated by the extent of the demand that the British government follow the Czar's example and enact Prohibition, at least during the war and the subsequent de-mobilization.

This request has been presented in the form of nine monster petitions, coming from millions of people in England, Scotland and Ireland. One remarkable list of signers includes representatives of the navy, army, munitions makers, scientists and health officers of the kingdom, leaders of finance and industry, educational leaders and social service workers.

Prohibition, the petition states, would avert two grave dangers which are holding back the power of early victory—the wasting-power of alcohol and the imperiling of infant life. It would enable Great Britain "to strike the mightiest blow for freedom" of which she is capable, and would do away with a condition under which "the men in the trenches are betrayed by an enemy at home." The petition sets forth a number of weakening effects of alcohol upon the kingdom, and asks Parliament to demand a sacrifice for which, the signers believe, the nation is ready.

The petition in full as follows is quoted because of its authoritative statement of the handicap imposed by drink on the exercise of the nation's full powers in the war:

We, citizens of the United Kingdom, appeal to the government to put the nation on its full strength.

Two grave dangers stand before us, holding back the power of early victory and throwing a shadow over the vision of peace. One is the wasting power of alcohol; the other is the imperiling of infant life.

Among all the factors of weakness, these confront us with terrible vividness, and they lie within our own control. With the weakening power of alcohol removed, our national effort against the enemy would gather increased strength; with increased strength and more rapid supplies our losses in six campaigns would have been substantially reduced.

Now that the nation has followed the example of our allies in enrolling its full manhood, we appeal that we may range ourselves with our greatest allies and put on the whole armor of Britain. The power exerted by alcohol cuts through the efficiency of the nation; it weakens our fighting forces and must lengthen the war. These facts stand out concerning this powerful trade:

It hinders the army; it is the cause of grave delay with munitions; it keeps thousands of men from war work every day, and makes good, sober workmen second-rate.

It hinders the army; it is the cause of grave delay with munitions; it keeps thousands of men from war work every day, and makes good, sober workmen second-rate.

It threatens our mercantile marine; it has absorbed during the war between 60 and 70 million cubic feet of space, and it retards the building of ships to replace our losses.

It destroys our food supplies; in twenty months of war it consumed over 2,500,000 tons of food, with sugar enough to last the nation 80 days. It uses up more sugar than the army.

It wastes our financial strength; in the first twenty months of war our people spent on alcohol £300,000,000.

It diverts the nation's strength; it uses 500,000 workers, 1,000,000 acres of land and 1,500,000 tons of coal a year; during the war it has involved the lifting and handling on road and rail of a weight equal to 50,000,000 tons.

It shatters our moral strength; its temptations to women involve grave danger to children and anxiety to thousands of soldiers.

The serious facts concerning the effects of drink on our forces have been known since the early days of the war, and military and naval officials appointed to investigate them pressed strongly for instant decision. During the eighteen months since then the government appointed the board of control, but its work, successful socially, has had little effect in the great industries on which our armies rely. Here the terrible truth of 18 months ago is still terribly true; **the men in the trenches are betrayed by an enemy at home.** After all that has been done, the loss of time on the Clyde is reduced from 20 to 19½ per cent; men earning a good week's wage in half a week abandon work for drinking, and those men who give their best to the nation, striving nobly to undo the injury of their weaker comrades, are powerless in this cruel grip. **It is not drunkenness alone, however, but the constant sapping of men's energies by alcohol, that endangers our supplies of munitions.**

Over a year has passed since the King banished this source of national weakness from his household; since engineers, manufacturers of explosives, admirals, directors of naval equipment, urged the government to banish it from the nation; since the director of transports appealed for the withdrawal of all drink licenses for the sake of the army and navy; and since the Shipbuilders' Federation declared that "with the total abolition of drink the work would go with a swing, and you would get as fine work in our yards and shops as in the trenches." Yet the alcohol brake is still on our workshops.

As it is impossible to estimate the disastrous naval, military, social and economic consequences of alcohol in this crisis, so it is impossible to exaggerate the good results of its removal. In towns under the control board, chiefs of police are glowing in their praise of peaceful towns and quiet streets at night, the London sessions following the adoption of the order were the shortest ever known, and several prisons have been closed since the board

began its work. Yet, though the general drinking hours have been suddenly cut down to two short intervals a day, there has been no serious complaint, and we commend this as proof of the readiness of the people to accept war restrictions and to share in a common sacrifice.

We are convinced that the dangers confronting us arise from the sudden possession of abundant wages rather than from a lack of patriotic feeling; untrained in spending or in thrift, large numbers of our workers waste their reserves in drink. **The greatest good a government can render to its people is to strengthen their right purposes and weaken the power of their temptations, and there lies upon us now the duty of protecting our people from the temptation to drink away their earnings, and of protecting the state from the intolerable folly of high war wages turned to the advantage of our enemies.**

With the resources of the nation taxed to their utmost, the waste of £500,000 a day on alcohol is a fact of pitiful significance. **With their high wages our people dig pits of sorrow instead of building up reserves of power and independence; children die faster of neglect, and a city missionary has received forty appeals from the trenches to look after wives "going wrong" through drink.**

If it is said we need the revenue the state derives from alcohol, the answer lies in these things. No nation can make a profit from such a trade as this. But the fear for the revenue is shattered by the noble action of our allies and dominions; of Russia, which has prohibited vodka; of France, which has prohibited absinthe and the sale of spirits to women, soldiers and young people; and of Canada, where the sale of alcohol is rapidly disappearing, followed by the closing of prisons and the quickening up of life.

Russia, wanting strength and money too, has found both in Prohibition. The saving power of her people has risen from shillings to pounds. The banks that received £180,000 in January before the war, received in January, 1915, £5,600,000, and in January, 1916, £12,000,000. The industrial efficiency of Russia has increased by 30 per cent, and an increase of 10 per cent in our efficiency would replace our revenue from drink.

But against all considerations of financial sacrifice must be set the threatened loss of our mercantile supremacy at sea. Unless we can replace our lost ships our supremacy is doomed, and victory in the field must find us bereft of the chief factor of our national prosperity. **The cargoes carried for the drink trade by our war-time ships, have been about 2,000,000 tons, and the same cause that reduces our shipping reduces our capacity for repairing and replacing our lost carrying power at sea. The contemplation of these things while neutral nations are building fleets must give rise to the gravest apprehension.**

More serious still is the peril of the child-life of the state. It is perishing faster than in times of peace. Our brave ally, France, with the enemy almost at the gates of Paris, won for itself the enduring distinction of the lowest infant death-rate ever recorded in its capital. What Paris can do can be done in our own towns if the same patriotic devotion be shown by our own people, and if all removable dangers to child-life be removed. Chief among these dangers is alcohol.

No source of weakness under our control is so widespread; none is more vital to the safety of the state in war and its welfare in peace. But the dangers of alcohol are tenfold now. **The prevalence of venereal disease among one-tenth of our urban population, its special danger to child-life, and the anxiety with which we must contemplate its wide extension as one of the terrible gifts of peace, impose upon us an increasing responsibility. In 1912 over 270,000 working days were lost in the navy from this cause, and 216,000 days in the army; and the Royal Commission has urged that a decrease of drinking would be an important factor in the decrease of this far-reaching cause of national decay.**

It is not to be questioned that in all these causes for apprehension alcohol is the greatest single factor that can be controlled. It is not to be questioned that the nation has readily approved the half-way step to Prohibition that has already been taken. It is our profound conviction that the next step must be

taken before the strength of Britain can be thrown effectively into the arena on which our liberties depend. No nation can be at full strength with such a factor in its midst.

We are no temperance reformers as such. **We stand for the great desire of all good people to strike the mightiest blow for freedom of which Britain is capable.** We support the demand for Prohibition made to the government by its own investigators, and by the shipbuilders' deputation, with not a teetotaler among them, in March, 1915. Believing, in the Prime Minister's words, that "no sacrifice is too great when freedom and honor are at stake," and that rich and poor alike should bear it, we ask the government to suspend all drink licenses throughout the kingdom for the period of the war.

We believe a golden moment has arrived for our country; that, prepared for sacrifice by the example of the King and Lord Kitchener, the nation is ready for the natural step that France and Russia have already taken. **The suspension of the liquor traffic during the war, the conversion of the public-houses into houses of refreshment, will quicken up our civic and fighting populations, will raise a new fire of resolution in our people, and will give to millions the first opportunity they have ever had of breaking old habits of weakness and forming new habits of strength.**

We believe that in this, as in all other vital issues, there must be sympathy of purpose and unity of action between the allied nations; and we appeal to the government to be bold and trust our people, to be strong and follow our allies, to be worthy of the mighty destinies they hold in solemn trust. (See also **Defeat or Victory?** by Arthur Mee.)

France's Experience

From France, as from Great Britain, come illustrations of the handicap which drink exerts in war-time. They suggest incumbences which the United States would do well to avoid.

Soon after the war began France struck at one of the serious sources of alcoholism by prohibiting absinthe, and the hours of sale for distilled liquors were somewhat restricted. General Joffre forbade the sale of intoxicants to soldiers in the war zone. The only alcohol supposed to be allowed the soldiers was that issued in the rations.

A recent book, "*L'Union Sacrée Contre L'Alcoolisme*," by Jean Finot, editor of *La Revue* and secretary of L'Alarme, an organization of which the President of France, M. Raymond Poincaré, is the honorary president, urges still further limitations on the general traffic. (See **France and Alcoholism in Wartime**.)

Among the illustrations giving the reasons are the following:

A letter addressed to us by an artillery officer of — says:

On August 2nd and the following days I was present in Brittany at the departure of trainloads of mobilized men, all intoxicated to such a point that the guards were ordered to lock the compartments. Although this was done, arrived at Brest, these marines continually found means of getting too much to drink. And as they were more embarrassing than useful, the naval officer in charge of the district sent them back home.

In *L'Ouest-Eclair* (May 17) we read:

From 5 to 9 o'clock in the evening, the recruiting stations which are overflowing with troops (young recruits and old reservists), turn loose into the city bands of men away from home, having nothing to do, who, during these four hours, go from cabaret to cabaret, cramming themselves into low

dogholes black with smoke where the air seems unbreathable. After these long stops, many of them go out staggering to return to the barracks.

What can our generals be thinking of this preparation for the fatigues of a campaign; and how can one conceive of the intensive training of our young soldiers under such conditions?

Thus well before the departure for the front, the result of this state of affairs shows itself by the daily admission to the hospitals of numerous sick—so numerous that it has been necessary to find an annex to receive them.

Grippe, pneumonia, or some other affection that would not be dangerous to a healthy organism carries these men off in two or three days owing to complications due solely to alcohol. **The mortality among these men is frightful.** All the physicians now attached to military hospitals could testify to the fact that France thus loses every day hundreds of soldiers. At a time when so many are suffering from this war, is it not extremely painful to see those upon whom we count for deliverance waste their feeble resources and abase and destroy themselves by alcohol when the whole strength of the nation should be straining toward a single end—victory?

It is not possible when alcoholizing oneself to prepare to undergo the fatigues of marches, assaults, long watches, rigors of extremes of weather, and if pneumonia makes ravages in the training stations, what will it do in the trenches when cold and fatigue will come more surely than enemy shells to finish the work of alcohol?

A sergeant at the front says:

Several of my comrades who have allowed themselves to drink too much* were excellent soldiers at the beginning of the war. Under the influence of alcohol they have become discouraged and insubordinate. I have noticed also that those who drank too much got tired more quickly. How many I have seen give out, and sit down in the trench because they had drunk too much the night before.

French army experience is teaching this. A colonel writes:

A bridge separates our station from the civil zone. Soldiers off duty have only to cross it to be again prey to the solicitations of the liquor dealers. They finally come back to us mortally injured by the immoderate use of drinks. They frequently bring back drinks for their comrades. If the people in civil life only knew all the evil which results in the army, doubtless they would not hesitate for a moment to shut up all the keepers of wine-shops and their defenders.

The climax of inconsistency and cruelty is reached when the soldier, lured to drink the brain poison which the authorities allow in the path of his only sources of recreation, becomes unconscious of his surroundings and commits some serious offense for which he is severely punished, by long imprisonment or even death! An instance of that kind is taken from a Normandy court journal:

Pilardeau came back the other evening to quarters, arm-in-arm with his comrade Capelle. Corporal Budeau, seeing the intoxicated condition of both of them, asked them to quiet down and to retire immediately. The wise advice angered Pilardeau who attacked Corporal Budeau and struck him in the chest with such violence that he fell against a gun-rack.

*The phrase "too much" reveals the still deplorable general ignorance of the fundamental fact that alcohol is a nerve depressant the use of which tends from a little to more because the little silences caution, weakens restraint and begets abandonment to the influences of the moment. In prohibiting absinthe, France did well, but left untouched all the "bitters," "aperitifs," spirits, wine, beer, etc. As long as France or any other nation attempts to stop alcoholism by prohibiting only the stronger liquors and allowing or encouraging the use of the weaker, it will be troubled by those who take "too much."

This lesson was learned by the early temperance societies in America three-quarters of a century ago. They tried curing drunkards and stopping drunkenness by pledging members only against spirits. But they failed until they made their pledges include abstinence from beer, wine and cider as well as from whisky, rum and gin.

The savage act, styled "violence to a superior" was severely condemned by the court-martial which, in spite of the plea of the advocate, condemned Pilardeau to the death-penalty. His comrade, Capelle, who had only shown disrespect, got out of it with five years in prison.

The last lingering doubt about the injury alcohol is still inflicting upon France in the midst of her life and death struggle must be dispelled when a liquor seller joins the rest in pointing out:

I understand all the harm that unwillingly I have done to my fellow-citizens, writes one in Dijon, but adds:—The financial condition of my poor family does not permit me to close my establishment. . . . But continue your campaign because I see around me the evil that alcoholism is doing to our soldiers. My poor brother-in-law who, when wounded, received permission to come back home, so far from being cured, has just succumbed, after having been intoxicated several times in the company of his comrades.

The government could better afford to pension the wine sellers until it found them other employment than to permit them to destroy its soldiers as a means of livelihood.

Nothing is more irrational than to throw the full responsibility for drunkenness upon the soldier. Army life away from home places him under peculiar temptations, as M. Finot explains:

We have seen, he says, that some generals commanding army corps have taken definite action in the protection of soldiers against drunkenness. But the territory outside the firing line also requires protection. The stations of the troops, the ambulances and the hospitals are scattered all over the land, and, nevertheless, nothing is yet done to safeguard the health of the troops and of the wounded. There is nothing more contagious than the passion for drink. Every soldier who is addicted to it easily leads away his comrades, who yield to the spirit of comradeship.

M. Finot adds testimony to that of many others concerning the retarding effect of alcohol upon the healing of wounds.

L'Ouest-Eclair is cited as stating:

All physicians and surgeons who have had the care of the wounded since the beginning of the war will tell you the enormous difference there is in the rapidity (or even possibility) of recovery in two wounded men according to whether they are alcoholic or not.

Quite recently, M. Finot says, it was decided to pay convalescents a monthly allowance. But as the sale of intoxicants to wounded soldiers was not forbidden, the latter spent all they received with the drink-sellers. I am told that several hospitals for wounded soldiers established in the outskirts of Paris by philanthropic women are on the point of being closed. The unfortunate convalescents, unable to resist the temptation of alcohol, often return home dead drunk and provoke scandals which frighten and discourage the ladies at the head of the institutions.

One enterprising convalescent having a few francs at his disposal is sufficient to lead off a dozen others into a debauch.

The evil thus increases daily. I have recently visited some 20 hospitals and ambulances, and everywhere the directresses have said the same thing: "Alcoholism does irreparable harm to the wounded and the sick. Why is it that the government takes no action to save our poor soldiers?"

ALCOHOL AND VENEREAL DISEASE IN THE ARMY

No aspect of the health of soldiers gives the army surgeon and officers more concern than the venereal diseases. Even in peace time in the United States army (1914), according to the last report

of the Surgeon General (1915), the admissions to hospital for these diseases "amounted to nearly one company out of every regiment and in war-time the rate always increases tremendously." The year the Spanish War broke out (1898) the rate was 81 per 1,000 men, and immediately afterward (1900) it jumped to almost double—155 per 1,000. The increase continued until 1905, when the highest point, 179 per 1,000, was reached. Since then vigorous measures, particularly the suspension of a soldier's pay if he is laid up with venereal disease, has brought the rate down again to practically what it was before the Spanish War, 85 in 1913, and 89 in 1914.

The United States Council of National Defense has recommended and the Secretary of the United States Department of War has ordered the establishment of a zone around every military command from which prostitution and the sale of alcoholic liquors shall be barred, "because of the intimate relations between prostitution and the use of such beverages."

In making this recommendation the Council had before it reports of conditions in the Austrian army in the present war and those on our Mexican border in the summer of 1916. In the Austrian army, according to Hecht of Prague, in the *Journal of the American Medical Association* (March 10, 1917) since the war began, a total equivalent of 60 divisions have been temporarily withdrawn from the fighting line for venereal diseases. Concerning the Mexican border, Exner says, in *Social Hygiene* (Apr. 1917), that "soon as the order to mobilize went forth, the vice interests also began to mobilize their forces and to move them to the border," where vice districts were established for and patronized by the soldiers.

Statistical averages for the venereal rates in the European countries now at war, except in a few instances, are not available. A German surgeon stationed at Gratz* reported in 1915 that 64 per cent of the officers and men there were infected with venereal diseases, many with syphilis. This would be at the rate of 640 per 1,000, but in the absence of statistics it cannot be taken as general. The Strength of Britain Memorial, as already stated (p. 27), indicates that in peace in 1912 the British army and navy lost 486,000 working days from this cause.

Exner says that "reliable facts at hand show that during the first eighteen months of the war one of the great powers had more men incapacitated for service by venereal disease contracted in the mobilization camps than in all the fighting at the front."

"In the same country," says Exner in *Friend and Enemy*, "there are 17,000 cases of venereal disease in a single hospital camp. Not long ago 80,000 soldiers on their way to the front passed through a certain Mediter-

*Dr. J. Ude in "Alkohol und Unsittlichkeit" (Steiermark 1915).

anean city with an average stay of two weeks in the city. The medical department is authority for the statement that 10 per cent of the men became infected with venereal disease during that stay."

The alarm felt over the prevalence of these diseases, however, is not due alone to their effects upon the efficiency of the troops, but because of the dangers they carry back to the home population.

"In the countries which are at war," says the *Journal of the American Medical Association* (Feb. 3, 1917), "the importance of the subject is emphasized by the ravages which these diseases always produce among troops in war time, and by the great increase in prevalence of the venereal diseases which experience has shown follows the return of troops at the end of the war."

It is with these diseases as with the results of alcoholism. The public has no conception of the damage they do, because the real source or starting point of the disabilities, diseases and deaths to which they lead is not reported. Physicians know that to the small number of deaths entered under the heads of syphilis and gonorrhoea should be added many others now credited to other causes such as locomotor ataxia, general paralysis of the insane, and many cases of arterial disease. Besides the actual death list, account is to be taken of an enormous loss of children in the families of parents suffering from syphilis and gonorrhoea, and of the many degrees of inherited taint and defects in the children who survive.

For these reasons venereal diseases are a menace to nations and races far beyond the general conception.

Sir William Osler is cited in the Report of the Royal Commission on Venereal Diseases (1916) as believing that of the mortal diseases, syphilis comes third or fourth.

This report (of a commission appointed in 1915) deals with the subject very comprehensively, showing the prevalence of the diseases, their economic effects, methods of treatment, legislation needed for control and educational recommendations. It also has a very significant paragraph in the relation of alcohol, beginning, "Abundant evidence was given as to the intimate relation between alcohol and venereal diseases."

A member of the Royal Commission, Dr. Mary Sharlieb, has published* a summary of this evidence in which she says: "It appeared from the evidence of Prof. F. W. Mott, Dr. Douglas White and Sir Victor Horsley that alcohol renders a man peculiarly liable to yield to temptations which he might otherwise resist.

"Not only does the influence of alcohol render the individual more liable to contract venereal disease by the throwing down of protective moral barriers, but it also makes the treatment both of syphilis and of gonorrhoea much more difficult, and most doctors

*British Journal of Inebriety, July, 1916.

insist that their patients shall be total abstainers, at any rate until the disease is cured. In the case of gonorrhoea the outward manifestations of the disease not infrequently become quiescent under suitable treatment; but they reappear with renewed intensity under the influence of certain stimuli, and of these those arising from the action of alcohol are among the most potent. Indeed, Sir Thomas Barlow, in his evidence before the commission, deposed that when he was physician at the Fever Hospital, and young men were brought in suffering from measles and scarlet fever, they constantly begged that no alcohol might be given to them, knowing only too well from past experience that it aggravated the symptoms of gonorrhoea. And, further, he said, 'From the very outset right on to the bitter end, the maleficent effect of alcohol on all venereal disease is remarkable.'

Not only slowing or failure in the medical treatment of these diseases, but actual danger to alcoholic subjects may arise from the combined effects of alcohol with the drugs prescribed.

Sir Thomas Barlow in his evidence mentioned that Prof. Ehrlich told him that some of the bad cases of injury arising from salvarsan have occurred in alcoholic subjects, and that he explicitly besought those who are carrying out the treatment on no consideration to use it on an alcoholic person. "The way in which alcoholism shows up syphilitic lesions is one of the commonplaces of pathology," adds Sir Thomas Barlow. "Everybody knows it makes syphilis more damaging and more refractory in every way from first to last. Again, it is very striking how, if you stop a man's alcohol when you are treating him for syphilis, and stop it absolutely, you often have so much more satisfactory results. There cannot be two opinions about that."

Dr. Moffat explained that, inasmuch as alcohol lowers the vitality of the tissues, it allows the micro-organism of syphilis a better chance of growth.

Dr. Sharlieb's conclusion is: "From all this evidence we are justified in believing that alcoholism has a direct and injurious influence both in furthering the infection of people with venereal diseases and also in rendering their treatment more difficult and their cure less probable. The evidence given before the commission and the conclusions of the commissioners lead us irresistibly to the belief that the avoidance of infection, the best hope of individual cure, and the prospect of stamping out this national danger, depend very largely on the intelligent care with which we seek the amelioration of the physical condition of the population and the promotion of self-control and temperance in all ways, but especially with reference to alcohol."

Further confirmation of the complicity of alcohol comes from Germany. Dr. Bonne, a military surgeon in the German army, says (*Der Alkoholgegner*, Oct., 1915):

We know that in the camp as well as in our university cities and in our garrison, alcohol is the procurer that in most cases drives our soldiers, our students and our officers to the prostitutes.

It is not the toppers and the drunken that go to these women, but those that are in the lighter stages, the beginning of intoxication and excitement, persons whose passions are aroused by drink, who see the world in a rosy light, forget wisdom and prudence, and then fall before the devil of venereal disease.

I have seen many tears and heard many expressions of remorse from youths and mature men who had contracted diseases in France and Belgium while in a state of light intoxication.

Practically the same indictment of alcohol is expressed by the American surgeon, C. E. Riggs, in a recent article in the *United States Naval Medical Bulletin* (Jan., 1917) on the relation of alcohol to this class of diseases:

There is an intimate and not well-understood relation between alcohol and venereal disease. In the first place, alcohol and prostitution are close allies. Promoters of vice recognizing that alcohol stimulates trade and increases profits have combined the sale of liquor with professional prostitution to practically a universal extent in this country (Kneeland). Among those places catering directly to vice the saloons and their accessories come first, and of all commercial factors promoting vice the saloon stands alone for sinister importance.

Alcohol promotes prostitution, and prostitution is the main source of venereal disease. There are also other well-known connecting influences between alcohol and venereal diseases besides the commercial one. Individuals under the influence of alcohol are more liable to expose themselves to venereal infection, as alcohol attacks and paralyzes the higher levels of the nervous system, such as caution, judgment and self-restraint. Fear of disease, which is an important restraining factor, under the influence of alcohol is likely to be cast to the winds. It is also a therapeutic fact that alcohol should be prohibited from venereal patients, as this drug has a special influence in retarding the progress of the cure.

Metchnikoff has pointed out that alcohol has a harmful action upon the phagocytes, the agents of natural defense against infective microbes, and that persons who indulge too freely in alcohol show far less resistance to infectious diseases than abstemious individuals. Therefore it seems reasonable that the different venereal germs, in particular the attenuated ones, have a greater opportunity to gain a foothold at the time of exposure in those persons whose bodily resistance has been reduced by alcohol than in those persons whose resistance has not been so handicapped. Consequently we would expect to find a greater percentage of infections following exposure under the influence of alcohol than we would find when no alcohol had been imbibed.

Authorities vary considerably in their estimates of the percentage of venereal disease which is contracted when under the influence of alcohol. Among the highest estimates is that of Dr. Douglas White, who states that about 80 per cent of the men who acquired these diseases have told their physicians that they have done so under the influence of some kind of alcohol. Forel gives 76 and Notthafft 30, as the percentage of venereal disease contracted when under the influence of alcohol. Of our 365 venereal patients, 137, or 37.5 per cent, admit having been under the influence of alcohol at the time of exposure, and 228, or 62.5 per cent, deny alcohol.

The actual percentage of those having taken alcohol is perhaps a little greater, as it was noted that several, having taken but a glass or two of beer, were unwilling to admit that they were in any way under alcoholic influence.

The report shows that statistics kept of the relative extent to which three forms of venereal disease were contracted indicated that the use of alcohol was followed by a larger proportion of cases of gonorrhoea and syphilis. "This unfavorable tendency shown by alcohol," says the report, "directly opposes that exerted by artificial prophylactic treatments."

Among Surgeon Riggs' conclusions as to the best methods of dealing with these diseases is the following:

The propagandas for the prevention of venereal disease and for alcoholic temperance may well go hand in hand, because (a) an attack upon one attacks the other and (b) for convenience, as the two evils principally exist among those of about the same social status.

During the discussions over the abolition of the beer canteen from the United States army posts a few years ago it was contended that if beer were withdrawn the men would go outside for it, get drunk and by reckless exposure in that state increase the venereal rates. Such has not, however, been the case. Alcoholism under the dry canteen has markedly declined, the last report of the Surgeon-General placing it lower than ever before in the history of the army, and the venereal rate was (1914) only 57 per cent of what it was in 1900, the last year of the canteen.

When Dr. Frank W. Hamilton reported the pernicious effects of the rum ration issued during the Civil War as a supposed aid to the men in the Chickamauga swamps he expressed the hope that the experiment would never be tried again by any army of the United States.

The results of the abolition of all intoxicants from the United States army and the experience of the nations now at war demonstrates the folly of ever restoring the liquor canteen or of making liquor accessible to military and naval forces. It also gives us the right to ask our European allies, who have warned us to profit by their mistakes, to take note of this past experience of ours, and to co-operate with us in providing the soldiers with more rational means of rest and recuperation than the deceptive, outgrown alcoholic drinks.

Objection has been raised that the alcohol European soldiers have received, could not have greatly handicapped them since they have done such splendid fighting.

Full credit for what they have done can be given without admitting that alcohol has aided them or that it has not been an injury instead of an aid. On the contrary, enough reports have already come through, some of them from official declarations, to show that from the beginning of recruiting to the return of soldiers to convalescent camps, drink has retarded their training and their recovery from wounds.

Nothing so far has contradicted the results of past experience with alcohol upon large and small bodies of men under all kinds of

privation, exertion and hardship. All such experiences, especially under conditions that have been at all comparable, have shown that men can do more and endure more for a longer time and with less ill effects upon their health, without alcohol than with it.

The rum ration of the British army, for example, has been the object of acute criticism by leading medical authorities of Great Britain. Sir Alfred Pearce Gould declares:

"Alcohol lessens man's power of physical endurance, delays recovery from fatigue, increases the ill-effects of great heat or cold, blunts the senses, retards nerve response, diminishes self-control and blurs the judgment. In all these ways alcohol gravely lessens the fighting value of a man."

The late Sir Victor Horsley, who died in the Mesopotamia campaign in 1915, disclaimed for the British medical profession (*British Medical Journal*, 1915) responsibility for restoring the regular rum ration "in opposition to both scientific and military experience," after many years of increasing restriction upon the use of rum in the army. He said in part, after reviewing the history of the rum ration and British and American army experiences with and without alcohol:

"The Regulation repeats the old, worn-out, mischievous error that people who are wet and drenched are helped to resist any ill-effects thereof by a dose of alcohol, whereas in fact the condition is reversed, because the alcohol increases the radiation from the wet skin which is already cooling by the evaporation of the moisture. But the Regulation even more seriously misstates the action of alcohol by suggesting it should be given to troops chilled by exposure to wet and cold as a curative procedure.

"Ignorance of physiology is often brought forward by non-medical persons as an excuse for their taking alcohol, and perhaps the absence of the Army Medical Department from the Army Council must be held responsible for this monstrous mistake. . . .

"That all the evils observed by military and naval officers to follow from the issue of the rum ration [see page 13] and the increase of the difficulties our men have already to contend against on active service, are the direct and invariable result of issuing the rum ration, is, of course, well known, and it is incomprehensible that Lord Kitchener's repeatedly expressed hatred of the alcoholic curse of armies should have been overborne, yet such is the case, and the nation and the army must suffer in proportion. . . .

WHAT TO USE INSTEAD OF THE RUM RATION

"Undoubtedly from a physiological standpoint the question of an alternative to the rum ration is one which should be answered by the medical profession and can be at once. The interests of the soldier require that he should be supported as far as possible against chilling and fatigue, mental and physical. . . . Physiology has proved that the man who is doing hard physical and nerve-trying work needs extra warmth and food; above all, hot liquid or semi-liquid nourishment easily assimilated, which, by being function-restoring, is genuinely stimulating. In the present trench campaign, there is no difficulty in supplying hot milk flavored with coffee, chocolate, etc., or thick hot soups, in the night or early morning. For troops on the march, probably one more 'cooker' or field kitchen per unit must be supplied, but the provision of hot liquid food—the real, genuine alternative to the cold deception, rum—is perfectly simple.

"Yet this question of supplying a real alternative for the rum sham is, indeed, no small matter, seeing that warm nourishment enables a man to shoot better and encourages him to go forward, whereas rum makes him shoot badly and inclines him to sit still or even go back.

"There remains another point of no little importance. Probably 200,000 to 250,000 men in the ranks now were teetotalers. At the least, the empire ought to provide fully for those men who have followed Lord Roberts'

lead, and it should not attempt to ruin their physique and morale with a spirit ration under the false statement that it is 'absolutely essential to safeguard their health.'

"Whatever else happens, if only the foregoing facts be made widely known, the reputation of the medical profession will at least be safe from the accusation that they are responsible for this gross injury done to our country and its defenders."



Alcohol - Physiological effect.

Title